

## **REMARKS**

### **Request for Reconsideration**

Applicants have carefully considered the matters raised by the Examiner in the outstanding Office Action dated June 16, 2009 but remain of the opinion that patentable subject matter is present. Applicants respectfully request reconsideration of the Examiner's position based on the amendments to the claims, the Certified English Translation of the Japanese Priority Document JP 2003-197799 and the following remarks.

### **Claims Status and Amendments**

Claims 1-26 are pending in this Application. Claims 1, 2 and 3 have been amended herein.

Claims 1, 2 and 3 have been amended herein to recite that high frequency electric field A is formed by superposing a first high frequency electric field of 200 kHz or less and a second high frequency electric field of 800 kHz or more. Support for this amendment can be found, for example, on page 16, lines 24-25 and lines 28-29.

No new matter has been added herein.

### **Priority Document**

Applicants have attached a Certified English Translation of the Japanese Priority Document JP 2003-197799 in order to perfect their priority with respect to the discharge space formed between a first and second electrode which are facing each other, and the second high frequency electric field applied by the second electrode is higher than the first high frequency electric field applied by the first electrode as recited in claims 6, 13, 17 and 26, and the claims which depend therefrom, and take their date back to July 16, 2003. The attached Priority Document supports the claims as follows:

<u>U.S. Claim</u>	<u>Priority Document</u>
6	Fig. 1, [0031], Fig. 3, [0042]
13	[0030]
17	[0039]-[0040]
26	[0023]

Respectfully, in view of the English Translation of Applicants' Priority Document, Applicants have perfected their date of priority. This will be used in responding to the Office Action as discussed in more detail below.

### **Prior Art Rejection**

The Examiner made the following two rejections:

(1) Claims 1-5, 12 and 14-16 are rejected as being unpatentable over a combination of Horiike (US 5,290,609), Fukuda '479 (US Pub. 2003/0113479), Hwang (US Pub. 2002/003216) and Suemasa (US 6,089,181); and

(2) Claims 6-11, 13 and 17-26 are rejected as being unpatentable over the combination of Horiike, Fukuda '479, Hwang, Suemasa and Fukuda '136 (US Pub. 2003/0232136).

Turning to rejection (1), the Examiner recognized that neither Horiike, Hwang nor Fukuda '479 teach high frequency electric field A formed by superposing a first high frequency electric field and a second high frequency electric field (see page 5 of the Office Action). The Examiner cited Suemasa to teach this limitation. However, the conditions and the effects of the superposing of Suemasa are different from those required in the claimed invention.

The differences between the instant invention, limitation (i) in Claims 1-3, (Ii) and Suemasa are clearly illustrated with a comparison of Example 1, pages 55-57, of the instant invention and Figure 3 of Suemasa provided in Table A below:

Table A

	Invention 10/544,084		Suemasa US6,089,181	
	Example 1		FIG. 3	
Power Source	First	Second	First	Second
$\omega$	100 kHz	13.56 MHz	380 kHz	13.56 MHz
Intensity of discharge V	6 kV	750 V	-	-
I	8 mA/cm <sup>2</sup>	150 mA/cm <sup>2</sup>	-	-
Output density	16 W/cm <sup>2</sup>	11 W/cm <sup>2</sup>	-	-
RF Power	-	-	0-1,000 W	1,300-1,700 W
Atmosphere	at or near atmospheric pressure		Vacuum	

In Figure 3, Suemasa teaches that the frequency of the first high frequency electric field is 380 kHz and the frequency of the second high frequency electric field is 13.56 MHz. Thus, Applicants have specifically amended claims 1-3 to more particularly point out that the frequency of the first high frequency electric field  $\omega_1$  is 200 kHz or less and the frequency of the second high frequency electric field  $\omega_2$  is 800 kHz or more. Therefore, claims 1-3 and the claims which depend therefrom are clearly distinguished from Suemasa.

Furthermore, Suemasa teaches that the process chamber is at reduced-pressure atmosphere. Thus, the first high frequency electric field in Suemasa is essentially unnecessary in starting plasma discharge in the plasma processing apparatus (col. 1, lines 21-24). Moreover, points E1-E3 in Fig. 3 illustrate the etching rate without application of the first high frequency

electric field (380 kHz RF Power is zero) (see Fig. 3). The etching rate of these points provide further evidence that Suemasa teaches that the first high frequency electric field is not necessary to start discharge. On the contrary, the claimed invention requires that the frequency of the second high frequency electric field is higher than the frequency of the first high frequency electric field. Moreover, a high intensity in the first high frequency electric field is necessary in the claimed invention in order to start discharging a discharge gas and maintain stable plasma discharge. Thus, since Suemasa teaches that a first high frequency electric field is not necessary, the conditions and the effects of the superposing of Suemasa are different and actually teach away from the claimed invention.

Applicants respectfully submit that the combination of Horiike, Fukuda '479, Hwang and Suemasa do not teach the method for forming a film claimed in the present application.

Turning to rejection (2), Fukuda '136 had been cited to teach the limitations of claims 6, 13, 17 and 26, including a discharge space formed between a first and second electrode which are facing each other, and that the second high frequency electric field applied by the second electrode is higher than the first high frequency electric field applied by the first electrode as claimed.

Fukuda '136 has a U.S. filing date and a publication date prior to the filing date but after the Japanese Priority Date of this application. Applicants have submitted a Certified English Translation of the claims of the Priority Document in order to perfect their priority with respect to the aforementioned limitations presented in claims 6, 13, 17 and 26, and submit that Fukuda '136 is now prior art only in accordance with 102(e).

Furthermore, because this is a 103 rejection and Fukuda '136 is prior art under 102(e), Applicants hereby make the following statement in accordance with 103(c) to remove Fukuda '136 as prior art:

The subject matter of Fukuda '136 and the claimed invention were, at the time the claimed invention was made, owned by the same person or subject to an obligation of assignment to the same person. *Id.*

Respectfully, Applicants have removed Fukuda '136 as effective prior art under 103. In light of removing Fukuda '136, which was relied upon to reject claims 6, 13, 17 and 26, and claims 7-11 and 18-25 which depend therefrom, Applicants submit that the Examiner's rejection has been overcome.

Moreover, none of the references cited by the Examiner, either alone or in combination, replace Fukuda '136. As shown above in Table A, there is no teaching or suggestion anywhere in

Suemasa of the intensity of discharge starting electric field IV or output density. Moreover, the Examiner recognized that Horiike, Fukuda '479, Hwang and Suemasa fail to disclose the plasma parameters as claimed in claims 6-11, 13 and 17-26 (see page 6 of the Office Action).

Since none of the references cited by the Examiner, either alone or in combination, teach a high frequency electric field A formed by superposing a first high frequency electric field and a second high frequency electric field as claimed, or a second high frequency electric field applied by the second electrode (800 kHz) that is higher than the first high frequency electric field applied by the first electrode (200 kHz), it is respectfully submitted that the claims presented herein are patentable over the Examiner's rejections.

### Conclusion

In view of the foregoing, it is respectfully submitted that the Application is in condition for allowance and such action is respectfully requested.

Should any fees or extensions of time be necessary in order to maintain this Application in pending condition, appropriate requests are hereby made and authorization is given to debit account #02-2275.

Respectfully submitted,

LUCAS & MERCANTI, LLP

By: Donald C Lucas  
Donald C. Lucas, Reg. #31,275  
(Attorney for Applicants)  
475 Park Avenue South  
New York, New York 10016  
Tel. # (212) 661-8000

DCL/CMJ/mr

Attached: Certified English Translation of the  
Japanese Priority Document JP 2003-197799